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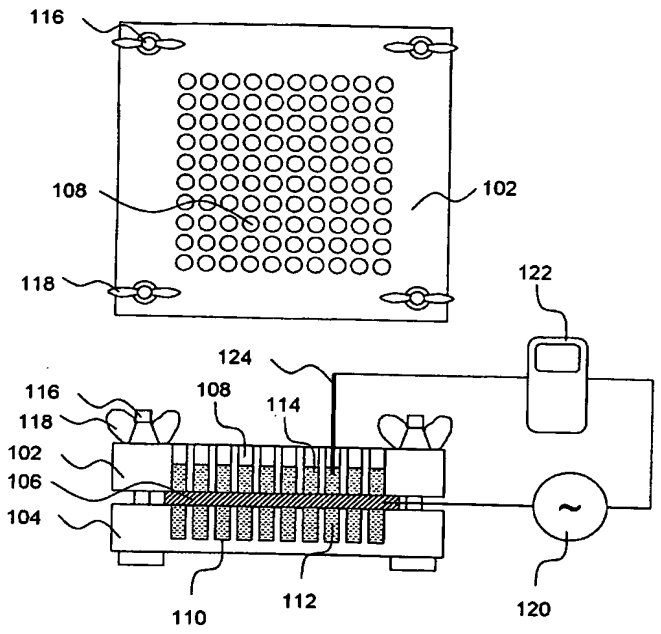
(54) Title: PENETRATION ENHANCER COMBINATIONS FOR TRANSDERMAL DELIVERY




(57) Abstract: A high throughput screening and isolation system identifies rare enhancer mixtures from a candidate pool of penetration enhancer combinations. The combinations are screened for high penetration but low irritation potential using a unique data mining method to find new potent and safe chemical penetration enhancer combinations. The members of a library of chemical penetration enhancer combinations are screened with a high throughput device to identify "hot spots", particular combinations that show higher chemical penetration enhancement compared to neighboring compositions. The irritation potentials of the hot spot combinations are measured to identify combinations that also show low irritation potential. A active component, such as a drug, is then combined with the combination in a formulation which is tested for the ability of the drug to penetrate into or through skin. It is then assessed whether the formulation can deliver the quantity of drug required, and animal tests are conducted to confirm *in vivo* the ability of the chemical penetration enhancer combinations to facilitate transport of sufficient active molecules across the skin to achieve therapeutic levels of the active molecule in the animal's blood. The invention provides specific unique and rare mixtures of chemical penetration enhancers that enhance skin permeability to hydrophilic macromolecules by more than 50-fold without inducing skin irritation, such as combinations of sodium laurel ether sulfate and 1-phenyl piperazine, and combinations of N-lauryl sarcosine and Span 20/sorbitan monolaurate.



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